

## **Appendix C**

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(54) Title of invention Teletext Reception Apparatus

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#### Specifications

1. Title of the Invention  
Teletext Reception Apparatus

#### 2. Scope of the Patent Claims

A teletext reception apparatus comprising the following: a detection means which is constructed so as to extract character or graphic information sent separately and superimposed on the normal image signal of a television broadcast signal, which is also constructed so as to regenerate said character or graphic information upon a cathode ray tube screen of a television receiver, and which detects a status signal generated during switching from a television reception mode to a teletext mode for regenerating said character or graphic information; the detection means being further constructed such that, prior to switching of a channel displayed prior to the channel switching operation, character or graphic information from the output of this detection means is erased.

#### 3. Detailed Description of the Invention

#### Industrial Field of Use

The present invention relates to a teletext reception apparatus which performs reception of a teletext broadcast.

#### Conventional Technology

In recent years, in accompaniment with the start of broadcast of teletext information sending character or graphic information utilizing the television frequency band, various industries have started to work actively toward development and commercialization of a teletext reception apparatus.

For a conventional teletext broadcast reception apparatus, the number of transmitting stations providing teletext information is restricted to just 1 station, or at most 2 stations, including experimental stations.

#### Problem to be Solved by the Invention

However, the below mentioned problems arise when, in contrast to the above mentioned situation, the number of broadcast stations increases.

That is to say, a television channel is received which has been broadcast by a first company A, and a screen of teletext carried on this television radio wave is detected and made visible. Then as the channel is changed to a television channel of a broadcast station provided by a company B, only the final page of teletext broadcast detected from that provided by the previous company A remains as the teletext screen for the channel provided by company B. Thus for the channel provided by company B, teletext mode is reset, and the teletext screen provided by company A remains until a count of the page of broadcast teletext has been detected.

Thus the above mentioned method is deficient in that the user of the teletext reception apparatus sees the occurrence of an unnatural phenomenon.

In consideration of the above mentioned problem, the present invention attempts to provide a teletext reception apparatus capable of automatically erasing the teletext screen of the channel shown prior to channel-switching and also capable of detecting the initial teletext page of the new television channel.

#### Means to Solve the Problem

In order to achieve this goal, the teletext reception apparatus of the present invention is constructed so as to be able to carry out the following consecutive steps: detecting a status signal generated at the time of the channel selection operation of the television receiver, using this status signal and erasing the teletext screen, and then searching for a new teletext page.

#### Operation of the Invention

Due to such construction, when channel switching occurs from channel A to channel B, this eliminates the unnatural phenomenon which is the existence of the remnant channel A teletext screen.

#### Working Example

A working example of the present invention is explained below while referring to a block diagram and a flow chart. Fig. 1 shows a block diagram of a teletext reception apparatus which is a working example of the present invention.

Within this Fig. 1, item 1 is a tuner, item 2 is an intermediate frequency amplifier circuit, item 3 is an image detection circuit, item 4 is an image amplifier circuit, item 5 is a switching

circuit for switching between the normal television signal and teletext signal, item 6 is a CRT, item 7 is a color demodulation circuit, item 8 is a channel selection circuit, item 9 is a synchronization separation circuit, and item 10 is a deflection circuit. These items 1 - 4 and 6 - 10 comprise a conventional color television receiver.

Item 11 is a data slice circuit for extracting the teletext signal from the television signal, item 12 is a clock generation circuit for generating a clock signal which becomes a basis for operation, item 13 is a data extraction circuit for extraction only of character and graphic information including control information requested by the user, item 14 is a system control circuit, item 15 is a display signal generation circuit, item 16 is a CPU, item 17 is RAM for executing a program as well as for writing of encoded character and graphic information, item 18 is ROM for data storage of a program, item 19 is a video RAM control circuit for pattern formation of character and graphic information readout consecutively from RAM 17, and item 20 is a D/A converter circuit. Output of this D/A converter 20 is provided to TV-teletext signal switching circuit 5.

Operation of the teletext reception apparatus constructed in the above mentioned manner will be explained next. First the teletext signal sent from the broadcasting station carried by television radio waves is extracted by necessary components (data slice circuit 11 and data extraction circuit 13). That is to say, only the encoded character and graphic signal is extracted by data slice circuit 11 and data extraction circuit 13 from the video signal whose image is detected by image detection circuit 3 after passage through tuner 1 and intermediate frequency amplifier circuit 2. The encoded character and graphic signal undergoes computational treatment by CPU 16, is written to RAM 17, and is formed into a pattern by video RAM control circuit 19. Thereafter the pattern is converted into an analog signal by D/A converter 20, and then the analog signal is supplied to TV-teletext signal switching circuit 5. Here during teletext mode, the analog-converted character and graphic information is selected and is output on CRT 6. In this case, the broadcast channel (channel A) provided by the broadcast station of the first company A is received, and the teletext screen is viewed. Thereafter if the channel is changed so as to receive the signal of the channel (channel B) of the broadcast station of company

B, the channel operation method requires first returning to the television mode from the existing teletext mode, thereafter selecting the channel B, and then again starting the teletext mode. Each time this operation (mode switching) is carried out, a status signal is generated at the channel selection circuit 8 side and the code of the status signal is changed. According to the illustrated example of the present invention, this status signal is observed by system control circuit 14, and if the status signal is detected for the change from TV mode to teletext mode, a program of CPU 16 is used to erase the teletext screen of the channel A, and after the switch, is used to set magazine 0 page 0 of the channel B.

A flowchart of this program is shown in Fig. 2. Within Fig. 2, a status read is first carried out every 1/60th second during step 31 by interrupt (data output) processing, and it is determined whether or not teletext mode is in effect (step 32). If teletext mode can be detected according to this status signal, then it is determined whether or not the mode stored previously in RAM 17 is teletext mode (step 33). If teletext mode is not stored, the code signal for teletext mode (status signal) is written to RAM 17 (step 34), and also screen erasure is carried out (step 35). Thereafter if the status signal is not teletext mode during step 32, or if the teletext mode status signal has not been previously recalled during step 33, this signal is written to RAM 17 (step 36). Thereafter program execution proceeds to the next step.

#### Results of the Invention

According to the invention as described previously, a signal is detected which is obtained during switching from TV mode to teletext mode, and screen erasure is carried out. Thus when switching occurs to the broadcast program of station B, it is possible to eliminate the unnatural phenomenon of the teletext screen of the pre-switch A station remaining.

#### 4. Simple Explanation of Figures

Fig. 1 is a block diagram of the teletext reception apparatus which is a working example of the present invention. Fig. 2 is a flow chart for explanation of the operation of the essential components of Fig. 1.

8....channel selection circuit, 11....data slice circuit, 13....data extraction circuit, 14....system control circuit, 16....CPU

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[see source for figures]

#### Figure 1

- 1: Tuner
- 2: Intermediate frequency amplifier circuit
- 3: Image detection circuit
- 4: Image amplifier circuit
- 5: Switching circuit
- 6: CRT
- 7: Color demodulation circuit
- 8: Channel selection circuit
- 9: Synchronization separation circuit
- 10: Deflection circuit
- 11: Data slice circuit
- 12: Clock generation circuit
- 13: Data extraction circuit
- 14: System control circuit
- 15: Display signal generation circuit
- 16: CPU
- 17: RAM
- 18: ROM
- 19: Video RAM control circuit
- 20: D/A converter circuit

#### Figure 2

[from top to bottom]

Interrupt handling

- 31: Status read (readout of mode)
  - 32: Text mode?
  - 33: Is mode previously stored in memory?
  - 34: Store mode in memory
  - 35: Erase screen and search magazine 0 page 0
  - 36: Store mode in memory, bottom unlabeled
- Proceed to next step.